

ALTERNATOR TECHNICAL DESCRIPTION

LSA 53.2 VL10 / 4p

LS Reference: TDS-MVH-1446
Enquiry Reference: ENQ-25-0497

Date: 27-11-2025

V6.10h - 09/2025

Leroy-Somer
Electric Power Generation
Bangalore

kavya.gk@mail.nidec.com

Main data

Generator type:	LSA 53.2 VL10 / 4p		
Power:	2 700 kVA	2 160 kW _e	2 241 kW _m
Voltage:	3 300 V	Star serial	
Rated voltage range:	+5/-5%		
Power factor - Lagging:	0.8		
Frequency:	50	Hz	
Speed:	1 500	RPM	
Nominal current:	472	A	
Winding type:	p5/6		
Classes (Insulation / Temperature Rise):	H / F		
Ambient temperature:	40	°C	
Altitude:	1 000	m	

Installation

Prime mover:	Reciprocating engine
Manufacturer:	-
Type:	-
Duty:	Base Rating

Mechanical construction

Type of construction:	Two bearing
Mounting arrangement:	Horizontal Axis
Direction of rotation:	Clockwise (when facing the drive end - DE)
Bearing type:	Anti-friction
Bearing Lubrication:	Regreasable
Bearing insulation:	Not insulated
Shaft end type:	Cylindrical with keyway
Balancing - Class:	Half key - G2,5 (std)
Shaft height:	Refer drawing
Width:	Refer drawing

Additional specificities

Stabilized Runaway speed:	1 800 rpm - 2 min.
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Cooling Method

IC01

Degree of protection:	IP23
Coolant:	Air / Temperature: 40 °C
Air quality:	Clean
Ventilation (internal):	Self-ventilated
Filters:	Without
Ducting for air inlet:	No
Ducting for air outlet:	No

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Connection, Excitation & Regulation

Parallel operation:	Between alternators (1F) - 1 x Droop CT
Excitation:	Self-excited - Brushless: AREP + PMI
Sustained 3-phase Isc:	> 3 x FLC for 10s.
AVR type:	Leroy Somer - D550 - Digital
AVR location:	In terminal box
Alternator Voltage sensing:	Terminal box mounted voltage sensing VTs

Terminal box

Power connection:	4 connectors (brought out neutral)
Main terminal box location:	1 terminal box on the top
Line side outlet:	Left hand side (seen when facing the drive end - D)
Auxiliaries	In main terminal box

Protection and measurement accessories

Temperature detection

Stator windings:	6 x PT100 (3 wires)
DE bearing:	1 x PT100 per bearing (3 wires)
NDE bearing:	1 x PT100 per bearing (3 wires)

Anti-condensation heating

Alternator:	Voltage: 230 V - 1Ph / Power: 2x250 W
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Various items

Paint:	Customer to confirm
Documentation:	PDF maintenance manual
Documentation Language:	English

ALTERNATOR ELECTRICAL DATA LSA 53.2 VL10 / 4P

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Main data:						
Power:	2 700	kVA	2 160	kWe	2 241	kWm
Voltage:	3300	V	Frequency:	50	Hz	
Rated voltage range:	+5% / -5%		Speed:	1500 rpm		
Power factor - Lagging:	0.8		Phases	3		
Nominal current:	472	A	Connexion	Star serial		
Insulation / Temperature rise:	H / F		Winding type:	p5/6		
Cooling:	IC01		Winding:	- 6 Wires		
Ambient temperature:	40	°C	Overspeed (rpm)	1800		
Altitude:	1000	m	Total Harmonic Distortion (THD) < 1.5%			
Duty: Base Rating						

Efficiency (Base 2160 kWe)					
	25%	50%	75%	100%	110%
Power factor - Lagging: 0.8	95.06	96.53	96.62	96.39	96.26
Power factor - Lagging: 1	95.45	97.13	97.43	97.40	97.35

Reactances (%) - (Base 2700 kVA)					
Unitary impedance (1 per unit) = 4.033333 ohms					
		<i>Unsaturated</i> <i>Saturated</i>		<i>Unsaturated</i> <i>Saturated</i>	
	Direct axis			Quadrature axis	
Synchronous reactance	Xd	347	333	Xq	177 170
Transient reactance	X'd	36.5	31.0	X'q	177 170
Subtransient reactance	X''d	20.2	17.2	X''q	21.2 18.0
Negative sequence reactance	X2	20.7	17.6		
X0	14.1	Zero sequence reactance			
XI	10.1	Stator leakage reactance			
Xr	28.6	Rotor leakage reactance			
Kc	0.30	Short-circuit ratio			

Time constants (s)					
		Direct axis		Quadrature axis	
Open circuit transient time constant	T'do	3.15		T'qo	NA
Short-circuit transient time constant	T'd	0.331		T'q	NA
Open circuit subtransient time constant	T''do	0.038		T''qo	0.158
Subtransient time constant	T''d	0.021		T''q	0.019
Ta	0.043	Armature winding short circuit time constant			

Resistances (%)					
Ra	1.5	Armature resistance	R0	4.7	Zero sequence resistance
X/R	11.2	X/R ratio (without unit)	R2	4.1	Negative sequence resistance

Voltage accuracy: 0.25%

Maximum inrush current for a voltage dip of 15%: 1450 kVA

when starting an AC motor having a starting power factor between 0 and 0.4

Rating is provided for the specified temperature rise, by resistance measurement according to IEC60034-1

According to: I.E.C. 60034.1 - 60034.2 - NEMA MG 1-32

Products and materials shown in this catalogue may, at any time, be modified in order to follow the latest technological developments,

improve the design or change conditions of utilization.

ALTERNATOR MAIN CURVES LSA 53.2 VL10 / 4P

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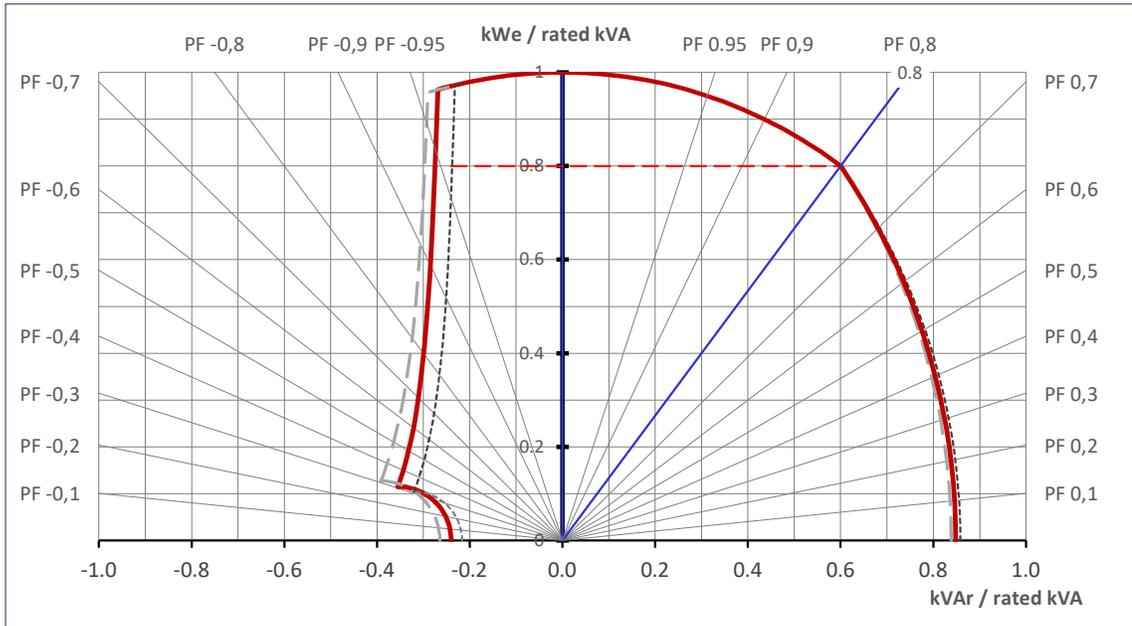
Date: 27-11-2025

2700kVA - 3300V - 50 Hz

V6.10h - 09/2025

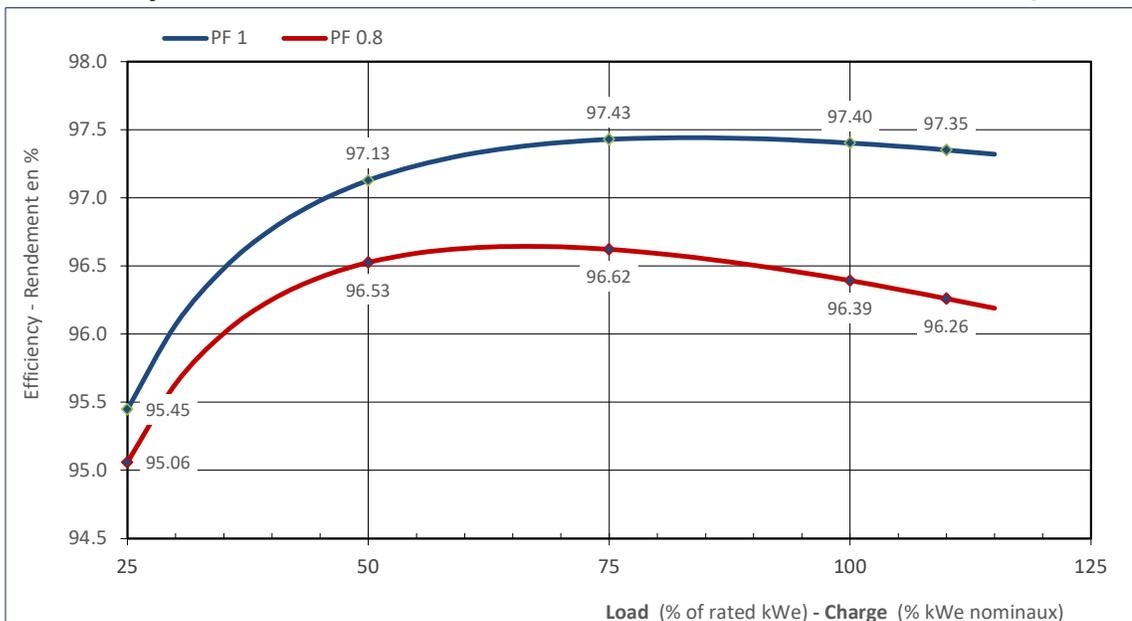
Capability Curve

---	Umax	+ 5%	3 465	V
—	Un		3 300	V
- - -	Umin	- 5%	3 135	V



Efficiency Curves

According to: IEC

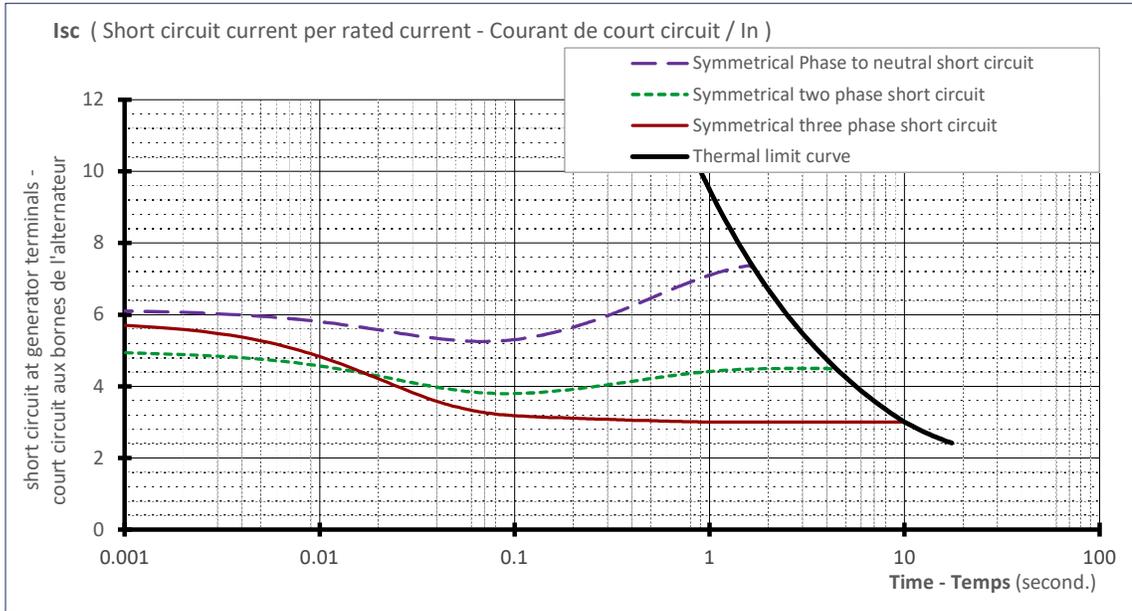


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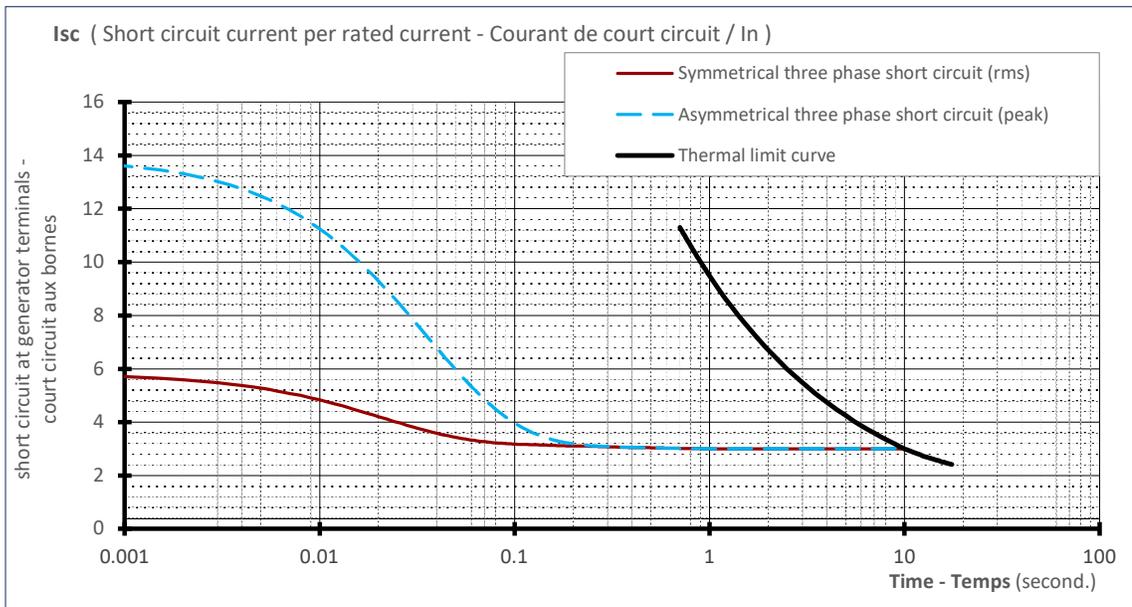
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Stator Current decrement curves

Symmetrical phase to neutral short-circ	—	initial	2 879	A	6.1 x In	
Symmetrical two phase short-circuit	- - -	max	2 328	A	4.9 x In	In = 472 A
Symmetrical three phase short-circuit	—	value	2 692	A	5.7 x In	
Thermal Limit	—					



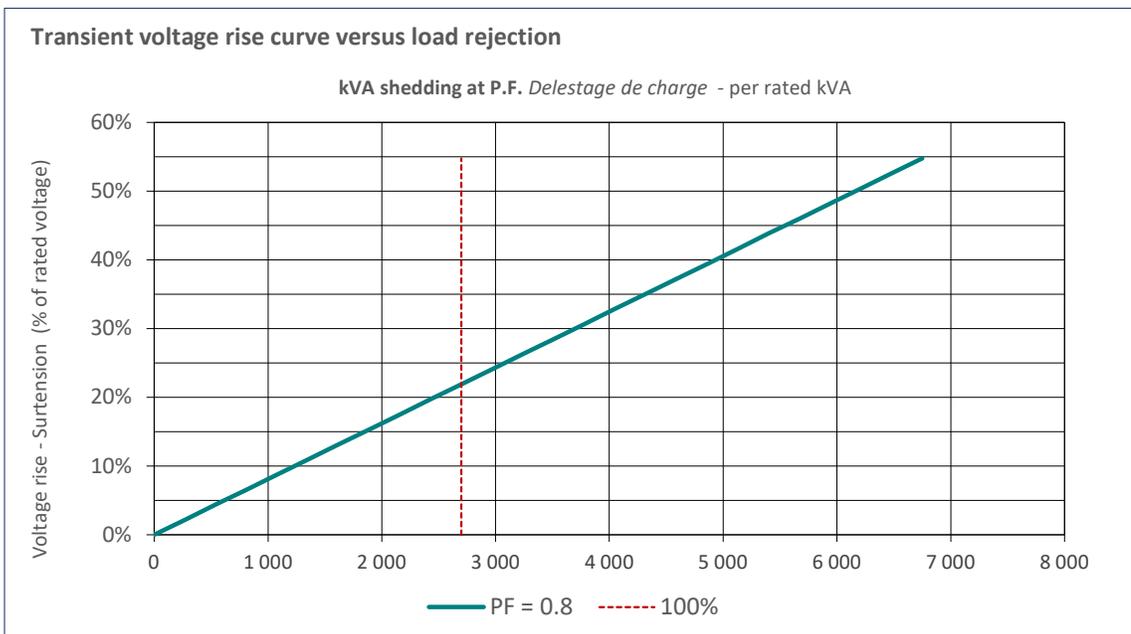
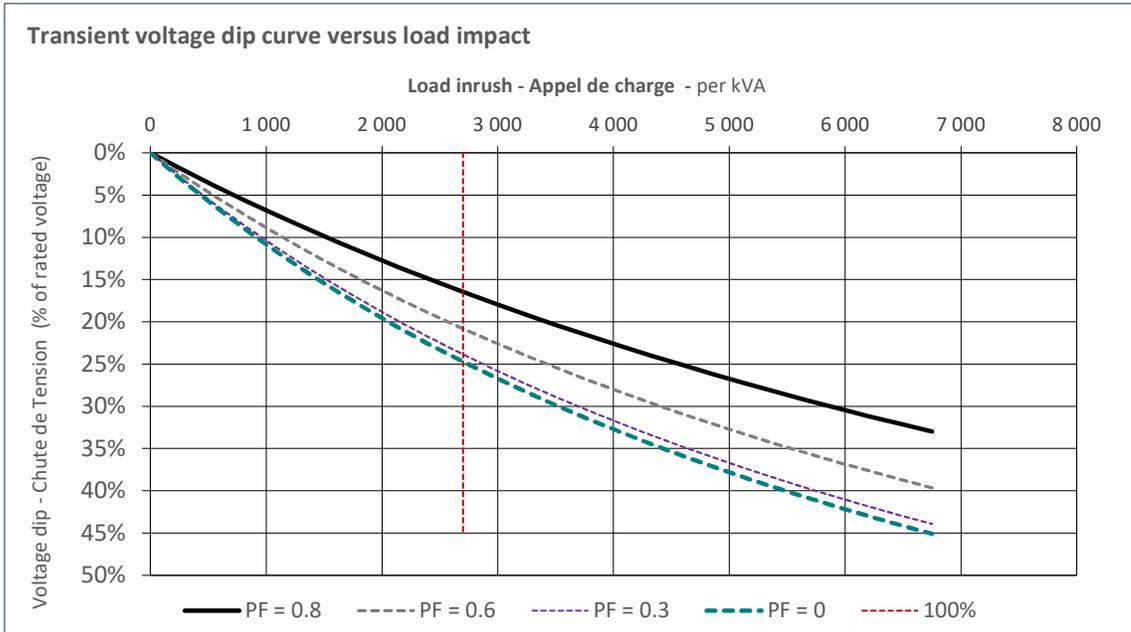
Asymmetrical three phase short-circuit — IP 6 359 A 13.5 x In



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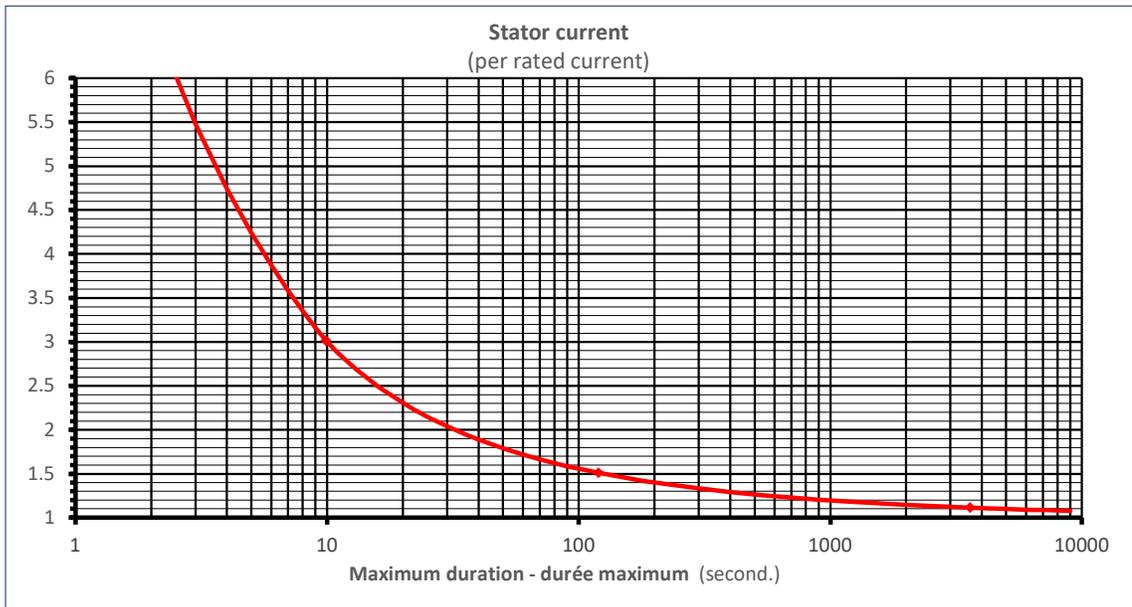
Transient Voltage Variation



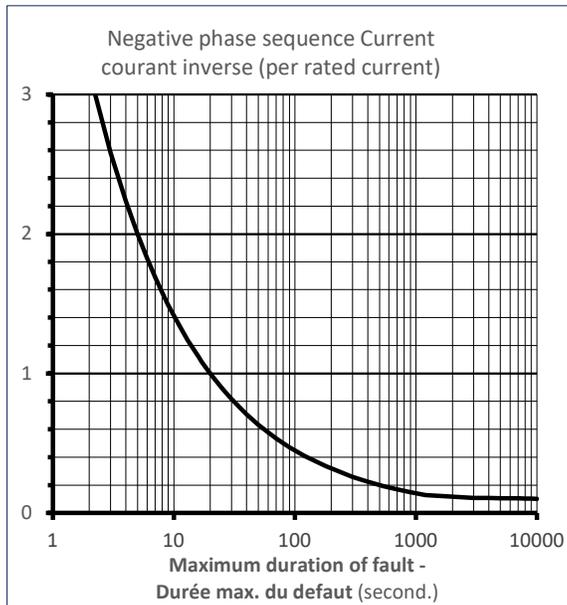
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Thermal Damage Curve



Unbalance Load Curve



Stator Earth Fault Current

